

REMARKS

By way of the foregoing amendments, Claims 1 - 9 have been amended to incorporate amendments consistent with those made during the international stage. In addition, the original claims have been amended to delete the "characterized in that" language, remove multiple dependencies, and otherwise better conform the claims to conventional U.S. format. New Claims 10-16 have also been added.

Attached is a substitute specification which is presented to place the specification in a form that more closely corresponds to U.S. practice. Accompanying the substitute specification is a mark-up copy of the original specification showing changes that have been incorporated into the substitute specification. No new matter has been introduced by the changes presented in this Preliminary Amendment.

Early and favorable consideration of this application is respectfully requested.

Should any questions arise in connection with this application, the undersigned respectfully requests that he be contacted at the number below.

Respectfully submitted,

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Description

Railway bogie

RAILWAY BOGIE

FIELD OF THE INVENTION

[0001]__The invention relates to a railway bogie comprising at least two spring units per one wheel and a bogie frame.

BACKGROUND DISCUSSION

[0002]__From UIC standard a bogie with helical springs is well known, ~~whereby~~ in which the axlebox suspension consists of helical springs in combination with friction damping. ~~Thereby the~~ The springs rest on support arms integral with the lower part of the axlebox housing and are connected with the bogie frame using caps integral with the bogie frame for taking up the top of the springs.

[0003]__US 2002-0089 102 A1A1 discloses a hydraulic spring comprising a membrane. ~~Therein it is also disclosed~~ This document discloses that ~~said the~~ hydraulic spring is for use in rail vehicles especially as a primary spring.

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[0004] Further, the catalogue of the company ContiTech Luftfedersysteme GmbH in Hannover, Germany, "Air Spring Systems for Modern Rail Vehicles", printed and distributed in October 1998, discloses the use of hydraulic springs comprising a membrane in two-axle bogies.

[0005] One object of the present invention is to provide an improved railway bogie comprising at least two spring units per one wheel and a bogie frame, so that various types of spring units in connection with also various types of axleboxes having all diverse dimensions can be connected to the bogie frame having standardized dimensions in an easy and reliable manner.

SUMMARY

~~The object of [0006] A railway bogie comprises at least two spring units per one wheel, a bogie frame, and an essentially single piece adapter which bridges the invention is achieved by spring units and is arranged between the subject of claim 1. Preferable embodiments are described in the dependent claims.~~

~~According to claim 1 a railway bogie comprising at least two spring units per one wheel and a bogie frame is characterized by an essentially single piece adapter which bridges said spring units and is arranged between said spring units on the one side and said the bogie frame on the other side.~~

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~~So the~~ [0007] The adapter is used in an advantageous manner to adapt various types of spring units in connection with various types of axleboxes having all diverse dimensions to the bogie frame having standardized dimensions without the need of modifying the bogie frame. Just the adapter is modified according to the used type of spring units and axlebox, whereby any modifying of the adapter can be done more easily and in a more cost-efficient way than it could be done with the bogie frame itself.

[0008] With the accurately pre-fabricatable adapter it can further be assured that the two spring units are mounted to the bogie frame exactly with a prescribed distance between the principal axes of the two spring units, whereby every deviation from said ~~the~~ prescribed distance would result in a tangential deviation of the spring units and therewith in an undesirable modification of the spring characteristic.

BRIEF DISCUSSION OF THE DRAWING FIGURES

[0009] Further advantages, features and details of the invention are described with respect to one preferred embodiment of the invention with reference to the accompanying drawings wherein: briefly described below.

[0010] Figure 1 is a longitudinal cross section in the region of one wheel of a bogie and.

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[0011] Figure 2 is a sectional view along the line B-B of Figure 1.

DETAILED DESCRIPTION

[0012] Figure 1 shows a longitudinal cross-section in the region of one wheel 2 of a bogie of the so-called Y 25 type, whereby the cut is directed according to a plane being defined by the axes of rotational symmetry of a first and second hydraulic spring. The pictured section of the bogie comprises an axlebox 10 with a rolling bearing 4 mounted in a middle region of the axlebox 10. The rolling bearing 4 supports one end of one of the two axles of the bogie.

[0013] A base of the axlebox 10 is extended to the left and the right side forming a cup shaped region 12 at each of said ~~the~~ sides. Each of said ~~the~~ hydraulic springs comprises a spring element 20, which is attached to each of said ~~the~~ cup shaped regions 12 of the axlebox 10. A metallic ~~entrepièces~~centerpiece 26 is located in the ~~entrecenter~~ of each of the spring elements 20.

[0014] These two ~~entrepièces~~centerpieces 26 are attached to one bridging adapter 50. Therefore the ~~entrepièces~~centerpieces 26 and the bridging adapter 50 have bores for connecting the ~~entrepièces~~centerpieces 26 with the bridging adapter 50 via two bolts 52 pictured uncut in Figure 1 and 2. In other embodiments, the bolts 52 can be integral parts of the ~~entrepièces~~centerpieces 26 or of the bridging adapter

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50 or the ~~entrepièces~~centerpieces 26 can be connected to the bridging adapter 50 by any other connecting means.

[0015]__The bridging adapter 50 is attached to a longeron of a frame 6 of the bogie, whereby this, This longeron extends in a longitudinal direction parallel to the rails and is pictured uncut in Figure 1. Preferably the bridging adapter 50 is connected to the bogie frame 6 by welding.

[0016]__In the following description, just ~~that the~~ left cup shaped region 12 in connection with the left spring element 20 is described in detail, because the same applies to the right cup shaped region 12 in connection with the right spring element 20. Therefore Figure 2 shows a sectional view along the line B-B of Figure 1. The spring element 20 comprises sleeve shaped elastomeric elements 22 and intermediate sleeve shaped metallic elements 24 in an alternating succession, whereby the elastomeric and the metallic elements 22 and 24 are connected by way of ~~vuleanisation~~vulcanization. Also the ~~entrepièce~~centerpiece 26 is connected by way of ~~vuleanisation~~vulcanization to its adjacent elastomeric element 22.

[0017]__The spring element 20 is secured to the respective cup shaped region 12 of the axlebox 10 via a sealing ring 42, which is attached to the axlebox 10 via screws 44. In other embodiments the spring element 20 also can be directly ~~vuleanised~~vulcanized to the cup shaped region 12. The spring elements 20 forms together with the respective cup shaped region 12 of the axlebox 10 a volume for a

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fluid 30, particularly a hydraulic fluid. This volume is at least partly filled with the fluid 30. ~~The centrepiece~~ The centerpiece 26 is prolonged into said ~~the~~ volume forming a plunger shaped region 28. Thereby at least a disk shaped region at the end of the plunger shaped region 28 is dipped into the fluid 30, so that this arrangement fulfils the function of a damper. ~~So the~~ The cup shaped region 12 of the axlebox 10 together with the respective spring element 20 and the fluid 30 form together the hydraulic spring.

[0018] In another embodiment of the invention, a hydraulic spring can be used, e.g. according to the already cited US 2002-0089102 A1, comprising a membrane instead of the plunger shaped section 28 of the ~~centrepiece~~ centerpiece 26, whereby the cup shaped region 12 of the axlebox 10 is then also one part of the housing of the hydraulic spring.

~~List of reference signs~~

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ABSTRACT OF THE DISCLOSURE

A railway bogie includes at least two spring units per one wheel

4 — rolling bearing

6 — a bogie frame

10 — axlebox

12 — cup shaped region

20 — spring element

22 — elastomeric element

24 — metallic element

26 — centrepiece

28 — plunger shaped region

30 — fluid

42 — sealing ring

44 — screw

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— 50 — bridging and an essentially single piece adapter which bridges the
spring units and is arranged between the spring units on the one side and the bogie
frame on the other side.

— 52 — bolt